

STUDIES IN THE MELOLONTHINE SCARAB BEETLE GENERA
OF THE AMERICAN CONTINENTS. I. REVISION OF THE
GENUS *ATHLIA*.

By LAWRENCE W. SAYLOR

Research Associate, California, Academy of Sciences
San Francisco, California

This is the first of a projected series of studies in the genera of scarab beetles belonging to the subfamily Melolonthinae. The species are quite plentiful in the Americas and approximately 105 genera and 2,200 supposedly-valid species (550 species from the United States and 1,640 species from Central & South America and the West Indies) have been described to date; hundreds of proposed names now known to be synonyms are not taken into consideration in the above count. Numerous undescribed species and several undescribed genera await description in the writer's collection, and it is planned to describe these miscellaneous new species in these papers discussing the generic characters and proper taxonomic position.

In no other group of the scarab beetles are the genera so little known and understood, nor as poorly characterized, as in the present subfamily. Moreover, many of the genera are very rarely represented in collections, and at least one-fourth of the known genera are totally unrepresented in United States collections, and I have examined the collections of nearly every one of the larger institutions and museums.

To illustrate the confused condition, in the *Plectris*-group of genera, there are at least four other genera in "common" use today that are either directly synonymous with *Plectris* (when one studies hundreds of species) or must be entirely reevaluated and restricted or expanded if we are able to keep and use these names at all. Moser himself, formerly one of the outstanding experts on the group before his death in the 1920's, has described species in *Plectris*, or *Philochlaenia* or *Rhinaspis*, and later decided to move them from one genus to the other for various reasons, and Moser "knew" more species in these "genera" than any previous author.

Based on the study of hundreds of Moser's types in the Saylor Collection (acquired through the courtesy of the world expert on the ruteline scarabs, Dr. Ohaus), it is obvious that Moser's understanding and use of the 'genus' is a little at variance with the commonly accepted use of this category. Many of his genera are well set off, but others (as in the *Barybas* complex) are divided merely on the number of antennal segments, and as any intensive worker on the scarabs knows, this is a highly variable character in many groups; in fact, very many cases are known where a particular specimen has different

numbers of antennal segments on the two sides of the head. Moser also used the claw characters extensively and often divided species merely on the possession of cleft as opposed to simple and entire claws; this is frequently variable in the same species and unless it is correlated with other characters, especially differences in *facies*, I do not consider such a valid genus. Thus several of Moser's genera will be reduced in later papers, due to the lack of any *facies* differences, or any differential characters other than highly variable ones.

The principal general writers on the scarabs in the past have been Blanchard, Burmeister, Lacordaire, Bates, Arrow, Ohaus, Casey, Moser and Boucomont. Other individuals have done intensive work either on specialized groups or over short periods of time, among them Brenske, Erichson, Hohné and Prell. Arrow of the British Museum and Ohaus of Mainz, Germany are the only writers left of the former group, and both have been extremely active over many years and are still continuing in the field; Ohaus specializes mainly in the subfamily Rutelinae, and Arrow has worked in the entire family, being especially active lately in the Dynastinae.

Arrow, Ohaus and Moser write excellent papers and descriptions, but the previous older writers are a source of constant trouble to present day writers. Most descriptions of the older authors are usually very short or the most important characters (sexual differences, antennal club length and shape, mouthparts, tarsal characters, genitalia, etc.) are entirely ignored and the most obvious characters are mentioned—namely the color, size and pilosity, with usually only the vaguest references to the type of dorsal sculpturing. Some, such as Blanchard, gave three to five line of Latin and it is very difficult to place the species from these descriptions. No doubt for those times these descriptions were considered adequate and I only mention this to point out the extreme difficulty of deciding which of two or three, or even a dozen or more good species, was the one before Blanchard etc., and to which the name must apply.

In Blanchard's 1850 Catalogue he has widely separated many genera belonging close together and described the two sexes as different genera, and also included in some genera species belonging to different tribes. Burmeister's work is much more extensive and considerably better than Blanchard's short catalogue, but he also frequently ignores sexual differences and other important characters. Lacordaire's work on the scarab genera was indeed an excellent and outstanding piece of work, but he included only 47 genera of our present 105 so is hopelessly out-of-date. Much of our present day scarab classification is based in part or entirely on the systems of Erichson, Lacordaire and Burmeister.

Bate's work was usually very good though one must be care-

ful if considering dorsal puncturation in his descriptions: I have noted that in species where the surface is very finely punctate or minutely setose, Bates is quite likely to call it entirely smooth and impunctate, or entirely glabrous. His misidentification of certain older described species in the *Biologia*, as for example in *Ancognatha* and *Cyclocephala*, is something which may well be expected of any author dealing with the brief color descriptions, or when he lacks access to the types.

Boucomont worked almost entirely in the subfamilies Cõprinae, Aphodiinae, Geotrulinae and related laparostict scarabs, and published very extensively from a world standpoint.

Erichson's papers were variably good, in some the species being fairly well described, but in most of his papers the species are very difficult to correctly place from his descriptions.

Casey published extensively on the United States and many Central American scarabs, but limited his work to the subfamilies Rutelinae, Dynastinae and Cetoninae. Even though many of his species, in fact by far the greatest majority of them, have proven to be synonyms of already-known species, his generic work and acuteness of eye in noticing many points of taxonomic interest which had escaped previous authors was outstanding, and he contributed a great deal to our scarab knowledge.

The only writers publishing extensively on the Central and South American scarabs the past five years have been Arrow, Ohaus, Prell and Saylor, but a great deal of work remains to be done; the first part of which is the proper evaluation of the genera, based on the numerous new species continually turning up in nearly every collection.

The Genus *ATHLIA*

This distinctive genus of scarab beetles, with species in Chile, Peru and Argentina, has long been known to entomologists, but specimens are rare in collections outside of those countries. Since the genotype, *A. rustica* Erichson, was described in 1835, and *plebeja* Burmeister in 1855, no new species have been made known except the Argentine *bruchi*, described by Moser in 1924. Three new species in the Saylor Collection have been awaiting characterization for some years, and the opportunity is taken to review the entire genus, since the characters have never been adequately described, nor the natural affinities pointed out.

Rivers has given an account of the biology of *plebeja* Burm. which is a synonym of *rustica* Er.

Athlia is a very distinctive genus and belongs in the subtribe Sericoidini which includes *Sericoides* Guer. and *Apterodema* Fairm.; it may be immediately separated from these and all

other South American melolonthine scarabs at present known to the writer by the labrum being on exactly the same plane as the clypeus; in fact a superficial examination would lead one to believe that the labrum was actually the clypeal apex, unless he looked for the suture between the two. The before-apex insertion of the hind tibial spurs in *Athlia* is the same as in many of the species of the typically-Chilean genus *Sericoides*.

The sexual characters are not well indicated; the main points of difference are in the abdomen, as viewed laterally: that of the male is concave, while the female abdomen is slightly to strongly convex.

ATHLIA Erichson

(Derivation of name: from the Greek, meaning "miserable").

Athlia Erichson, 1835, Arch. fur Naturg., I, P. 1, p. 266; Casternau, 1840 Hist. Nat. II, p. 143; Curtis, 1845, Trans. Linn. Soc., XIX, p. 452; D'Orbigny, 1849, Dict. Univ. d'Nat. Hist., II, p. 293; Blanchard, 1850, Cat. Col., I, p. 84; Solier, in Gay, 1851, Hist. Chile, Zool. V., p. 118, t. 17, f. 9; Burmeister, 1855, Hand. Ent., IV, 2, p. 125; Lacordaire, 1856, Gen. Col., III, p. 210.

Rivera Germaine, 1855, Anal. Univ. Chile, p. 125, (new synonymy); l.c., 1903, CXII-CXIII, Ano. 61, p. 392; Rivera, 1904, Rev. Chile, VIII, p. 241-5, (biology).

Generic characters: Labrum strongly prolonged beyond the clypeal apex but on the same plane with the latter, and separated from it at sides by a strong notch. Apex of labrum strongly reflexed or not. Mentum longitudinally sulcate in basal half, apex broad and faintly emarginate. Form elongate, elytra more than three times longer than the strongly transverse thorax. Antenna 9-segmented, club 3-segments, ovate and minute. Abdominal segments free. Front coxae strongly conical; central and hind coxae both contiguous. Front tibia tridentate, with a narrow inner spur. Tarsi all elongate, variously pilose below in some species. Posterior tibia 7-8 times longer than its greatest width, not flattened, though slightly spinose; with two long, narrow, tibial spurs set on the inner side and definitely before the apex. Fifth abdominal sternite free and not connate with the propygidium, the last abdominal spiracle set below the suture and not contiguous with it.

KEY TO SPECIES

1. Size very small (7.5 mm.); color entirely testaceous; dorsal hairs very sparse. Argentina *parvissima*, new species
 Size much larger (10-15 mm.); color never pale testaceous. 2
2. Clypeus entirely convex and sparsely punctate; labrum short, smooth strongly thickened, and not reflexed, the center apex strongly and narrowly incised. Dorsal hairs very sparse and surface strongly shining. Brazil *brasilica*, new species
 Clypeus convex at center only, and densely punctate; labrum longer, not thickened, usually reflexed, apex at most broadly and not deeply emarginate; Surface dull and pruinose, at most faintly shining 3

3. Above with sparse hairs, the thorax only moderately subdensely punctate; above subshining and pruinose; clypeus coarsely, cribrately and contiguously punctate; elytral hairs and punctures very sparse. Argentina.....*bruchi* Moser
Above densely hairy, hairs of two lengths; thorax very dull and densely though very finely punctate; clypeal punctures not contiguous; elytral hairs very dense, some procumbent and the remainder erect..... 4
4. Color light brown to rufobrunneous and highly pruinose, varying to piceocastaneous and only slightly pruinose; middle apex of labrum from above truncate or very nearly so, if emarginate then very widely and shallowly so, the middle of the emargination *never reaching* to or near the *clypeal apex*; form more flattened and elytral striae strongly indicated, the hairs moderately long and dense. Chile....*rustica* Erichson
Color rufobrunneous, somewhat dull; middle apex of labrum from dorsal view rather strongly, and somewhat narrowly incised, the incision nearly or quite *reaching* the *clypeal apex*; posterior half of body strongly rounded; clytra with fine short hairs, the striae weakly indicated. Peru and Chile.....*rivera*, new species

Athlia rustica Erichson

A. rustica Erichson, 1835, Arch. fur Naturg., I, p. 267, t. 3, f. 4; Castelnau 1840, Hist. Nat. II, p. 143; Solier, in Gay, 1851, Hist. Chile, Zool. V. p. 118; Burmeister, 1855, Hand. Ent., IV, 2 p. 125.

A. plebeja Burmeister, 1855, Hand. Ent., IV, 2, p. 125 (new synonymy).

Rivera plebeja (Burmeister), Germain, 1903, Rev. Chile, VII, p. 392; Rivera, 1904, Rev. Chile, VIII, p. 241-245, (biology).

Male.—Form elongate oval, slightly wider behind. Color light brown, varying to piceocastaneous, surface very dull to faintly shining. Clypeus coarsely and densely punctate, disc tumid and often with short erect hairs; sides evenly rounded, the apex truncate. Exposed part of labrum nearly one-sixth as long as the clypeus, the apex of the former reflexed and varying from slightly and widely emarginate to truncate, the angles very broadly rounded and the sides separated from the clypeal angles by a distinct notch. Head with front densely, moderately finely punctate, with short erect hairs (surface often rubbed and nearly glabrous). Antenna 9-segmented, club 3-segmented and small and globose, segments 4-7 short and globose, the third a little longer. Mentum strongly impressed in basal half, transversely carinate at the apical two-fifths, then declivous to the faintly emarginate, wide apex. Prothorax strongly transverse, with the sides evenly arcuate, front angles bluntly rectangular, hind angles broadly and subangulately rounded, the base with strong complete marginal line; disc finely and very densely punctate, the punctures separated by 1-2 times their diameters, with short suberect hair. Elytron with strong sutural and 4 other strong equidistant striae, the intervals finely and not densely punctate, the punctures separated by 3-4 times their diameters and with short suberect hairs. Pygidium with short, dense, suberect hair, those at apex a little longer. Front and mid tarsi densely pilose beneath, the segments hardly at all widened. Hind tarsus much less densely

hairy below. Claws all deeply cleft, the lower tooth broader and a little shorter. Abdomen finely and not densely punctured, with suberect short hair; 5th and 6th sternites same as the preceding, though the 5th is a little shorter than the others.

Female.—A little larger and with a broader behind; Tarsal pilosity beneath shorter, the front tibial teeth usually larger than in male. Otherwise similar to male. Length 10.5–14.5 mm. Width 5–6.5 mm.

The writer has examined numerous specimens from many localities in Chile, among them Coronel; Santiago; nr. Pangal, VII-1930; Limache, Chili Central, XII-9-24, A. Faz Coll.; Limache, January; and many just plain 'Chili'. *A. rustica* and *plebeja* are only color variations of the same species, although a small very pale specimen certainly does look different from a large and dark one.

Athlia rivera, new species

Male.—Same as *rustica* in all essential characters, except as follows: Form obviously robust and oval behind, the elytra much more rounded dorsally; labrum deeply emarginate at middle, the center of emargination reaching back to the clypeal apex; dorsal hair finer and shorter; elytral striae not well indicated, the interval puncturation much finer; male genitalia identical with those of *rustica*. Length 11–12 mm. Width 6–6.5 mm.

The male *holotype* is from "Chile, Concepcion, P. Herbst. S., Moser det: *Athlia* n. sp.," and was given to the writer by Dr. Ohaus. The male paratype is from "Peru"; both are in the Saylor Collection. Named for Senor Rivera, who contributed an important beginning towards an understanding of the biology of this interesting genus.

Athlia brasiliica, new species

Male.—Form definitely elongate, only slightly wider behind. Color rufocastaneous, the thorax more rufous, strongly *shining* and apparently *glabrous* above. Labrum rather thick, *deeply* and narrowly emarginate at middle, the apex hardly reflexed at all, the angles very broadly rounded. Clypeus with disc evenly convex and sparsely somewhat coarsely punctate. Head with front finely and sparsely punctate. Prothorax finely, unevenly, and sparsely punctate, the punctures separated by 3–5 times their diameters; hind angles obtusely angulate and somewhat explanate. Elytra nearly 4 times longer than thorax, the striae weakly indicated, and the intervals coarsely punctate. Abdomen highly polished, *glabrous*. Pygidium very finely and extremely densely punctate in basal two-thirds, the center-base somewhat granulate; apical third highly polished and finely, very sparsely punctate, with long erect hairs. Tarsi only normally-pilose beneath. Claw of front tarsus cleft, with the lower part very much shorter and broader than the long, slender apical part.

Mid and hind tarsal claws strongly cleft, the two parts of nearly equal length. Male genitalia of nearly similar form as those of *rustica* Er. but the parameres stouter and shorter in the present species. Otherwise as in *rustica*. Length 12-14 mm. Width 5.5 mm.-6 mm.

The *holotype* and *paratype*, both males, are from "Nova Galicia, S. Catharina, Brazilja", and remain in the Saylor Collection.

Athlia bruchi Moser

A. bruchi Moser, 1924, Stett. Ent. Zeit., p. 121.

Female.—Form elongate; color rufocastaneous, highly pruinose, slightly pilose above. Labrum widely and shallowly emarginate, very strongly reflexed. Clypeal disc tumid, very coarsely and scabrosely punctured over the entire surface, the punctures contiguous. Thorax very finely and sparsely punctured, with short suberect hairs and with a slight impunctate median line. Elytral striae strongly indicated, the intervals very sparsely, irregularly and finely punctate, the punctures separated by 3-10 times their diameters, with a few short hairs. Pygidium and abdomen finely and densely punctate, with short suberect hairs. Tarsi only normally pilose beneath. Claws deeply cleft. Otherwise as in *rustica* Er. Length 15 mm. Width 6.5-7mm.

The species was described from Cordoba, Argentina. I have specimens labeled "Argentina" and "Argentina, Neuquen, Moser det.: *Athlia* n. sp." The coarsely cribrate clypeus, shining surface and less punctured surface will easily distinguish the species, even though males are not at present at hand.

Athlia parvissima, new species

Form very small, highly *polished*, entirely *testaceous*. Thorax and elytra with very minute, semierect hair. Labrum large, strongly reflexed, apex widely and narrowly emarginate. Clypeal disc very tumid, finely and not densely punctate; clypean suture strongly biarcuate. Front very minutely and sparsely punctate. Front angles of prothorax strongly and acutely angulate, hind angles not indicated but very broadly rounded; disc minutely and not densely punctured. Elytra nearly 4 times longer than the thorax, the striae obvious but not strong; intervals minutely wrinkled, finely and sparsely punctate. All tarsi only normally-pilose below. First segment of hind tarsus shorter than second. Claws finely cleft, the lower portion very much shorter than the upper. Length 7.5 mm. Width 3 mm.

The unique *holotype* in the Saylor Collection, apparently a female, is from "Zapala, Neuquen, Argentina, December." The markedly smaller size and entirely testaceous color, and the rounded hind thoracic angles immediately set off this species from all others as yet known.

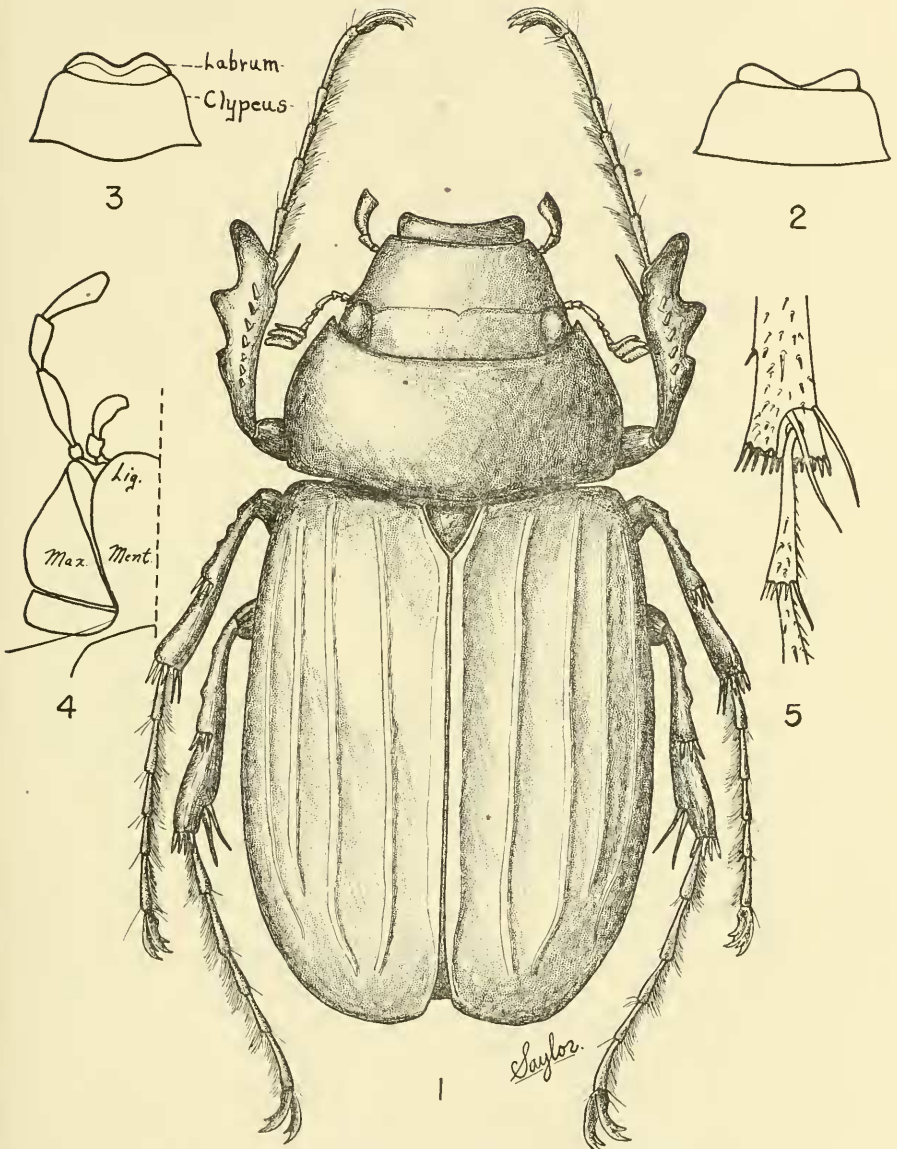


Fig. 1.—*Athlia rustica*. Erichson. (Dorsal vestiture not shown).
 Fig. 2.—*Athlia rivera*. Saylor. Clypeus and labrum.
 Fig. 3.—*Athlia brasiliica* Saylor. Clypeus and labrum.
 Fig. 4.—*Athlia brasiliica* Saylor. Mouthparts.
 Fig. 5.—*Athlia bruchi* Moser. Inner side hind tibia, to show insertion of spurs and tarsi.